

Update on Recommendations to the California Public Utilities Commission for Health Based Biomethane Standards



**Board Meeting
June 27, 2013**

California Environmental Protection Agency

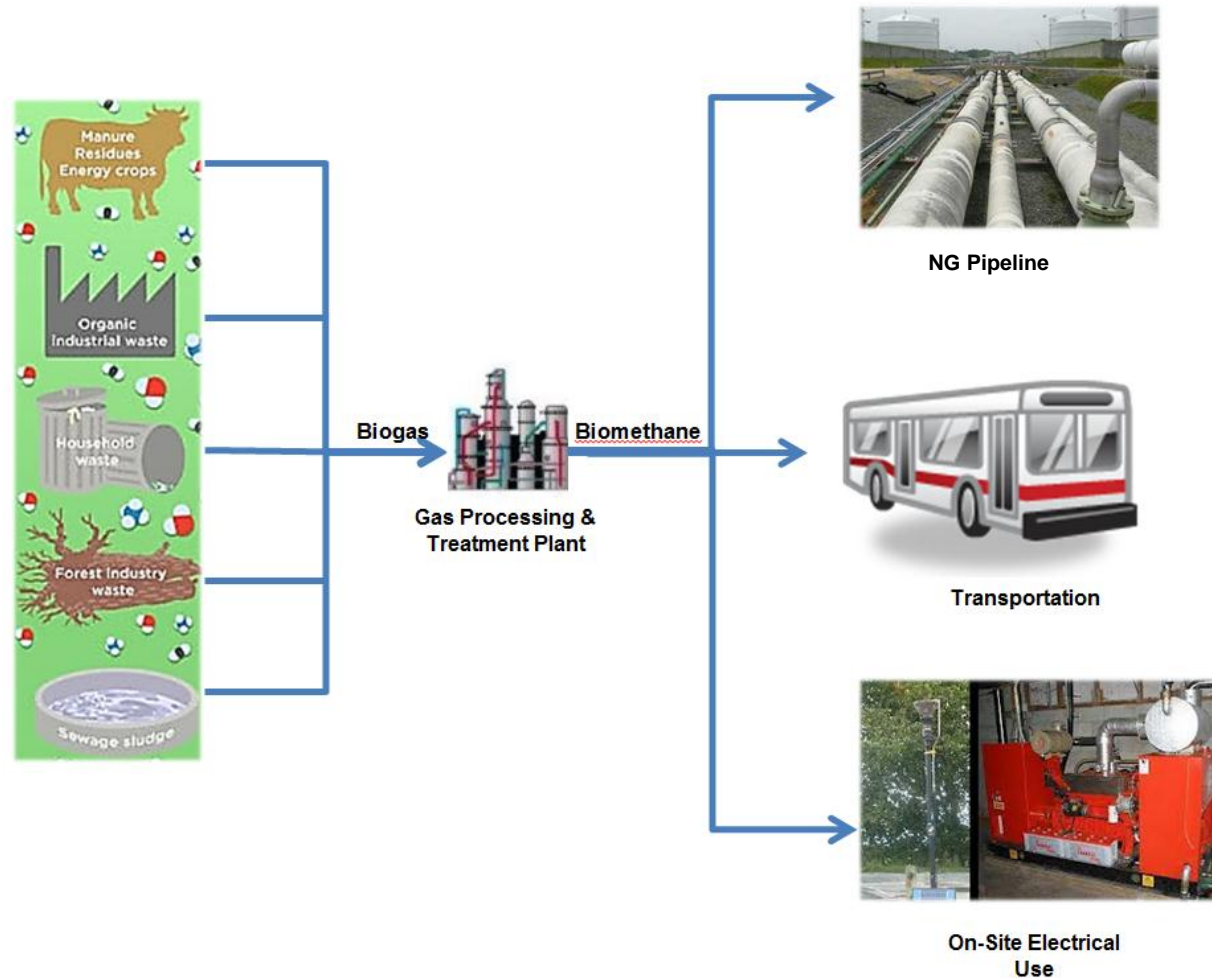


Air Resources Board

Biogas and Biomethane

- Biogas produced from anaerobic digestion of organic matter
 - Sources of biogas include landfills, sewage treatment plants, biomass, food waste, and dairy manure
- Biomethane produced when biogas is conditioned (upgraded)
 - Removal of carbon dioxide, water, nitrogen, oxygen, hydrogen, and trace contaminants
- Biomethane has many advantages
 - Renewable source of energy and supports energy diversity
 - Potential to reduce greenhouse gas emissions
 - Promotes sustainable waste management practices
 - In-state source of energy that creates jobs
 - Component of Waste Management Sector Plan and California's Bioenergy Action Plan

Biogas/Biomethane Production and Uses



AB 1900

- Removes barriers to allow greater use of biomethane generated in California
- Requires CPUC to adopt standards by December 31, 2013 for biomethane injected into the common carrier pipeline
- ARB/OEHHA to recommend health based standards for constituents of concern in biomethane to CPUC by May 15, 2013

Development Considerations and Public Process

- Short AB 1900 implementation timeframe
 - ARB/OEHHA exempt from the Administrative Procedures Act
- ARB/OEHHA outreach
 - Two CPUC public workshops & two public discussion meetings
 - Website/List Serve
 - www.arb.ca.gov/energy/biogas/biogas.htm
 - Met with stakeholders/coordinated with State agencies
- Additional public review provided as part of the CPUC regulatory process

Focus

- Biogas generated from larger sources with greatest potential for injection into the pipeline
 - Landfills, dairies, and POTW's (sewage treatment)
- Addressed only unburned gas, not combustion products
- Will address additional sources of biogas in AB 1900-mandated updates

Approach

- Identify compounds, concentrations and health values for constituents in biogas/biomethane
- Develop public exposure adjustments
- Identify concentration limits in biomethane necessary to protect public health
- Develop risk management approach to achieve health protective levels

Constituents in Biogas

- Analyzed available data from both raw biogas and biomethane
- Per AB 1900, only considered compounds found in significantly greater concentrations in biogas compared to natural gas
- Identified approximately 300 chemicals and chemical groups in biogas
- OEHHA recommended health values for over 200 constituents

Exposure Scenarios Modeled to Identify Constituents of Concern

- Evaluated four exposure scenarios
 - Two Residential
 - Two Worker
- Four gas streams
 - Natural Gas, POTWs, Landfills, Dairy
- Conservative exposure assumptions
- Model outputs used to identify constituents of concern

Constituents of Concern in Biomethane

Constituent	Landfill	POTW	Dairy
Antimony	X		
Arsenic*	X		
Copper	X		
p-Dichlorobenzene*	X	X	
Ethylbenzene*	X	X	X
Hydrogen Sulfide	X	X	X
Lead	X		
Methacrolein	X		
n-Nitroso-di-n-propylamine*	X		X
Mercaptans (alkyl thiols)	X	X	X
Toluene	X	X	X
Vinyl Chloride*	X	X	

* Denotes the chemical is a carcinogen, constituents without * included due to chronic hazard quotient.

Risk Management Recommendation

- Aligns with approach in ARB's Risk Management Guidelines for New and Modified Sources of Toxic Air Pollutants
 - Integrate risk levels into risk management decisions
 - Identify trigger levels and lower and upper action levels
 - Consider cancer and non-cancer risks
 - Ensure potential health risks are avoided

Recommendations for Testing and Monitoring

- Monitor biomethane after treatment and prior to pipeline injection
 - Prior to first injection, test for constituents of concern identified for biomethane source
 - On-going monitoring linked to measured concentrations and the specified trigger/action levels for constituents of concern
 - Below trigger levels – annual testing
 - Above trigger levels and below lower action levels – quarterly testing
 - At or above upper action levels – shut-off/no injection

Recommendations for Recordkeeping and Reporting

- Retain records of test results for 3 years
- Provide annual report to CPUC (and CPUC to provide to ARB and OEHHA)
- Utility and biomethane producer to share test data

Biomethane Can Be Safely Injected into the Pipeline

- Injection of biomethane does not present an additional health risk compared to natural gas
 - Most constituents of concern found to be below the trigger levels
 - All below the lower action levels
- ARB/OEHHA staff recommendations provided to CPUC on May 15, 2013

Next Steps

- CPUC to integrate ARB/OEHHA recommendations to protect public health with pipeline safety requirements
 - Regulatory process to be completed by end of this year
- Biogas producers expected to pursue additional projects to inject biomethane into the natural gas pipeline